

REMARKS / DISCUSSION OF ISSUES

The present amendment is submitted in response to the Final Office Action mailed March 9, 2010. In view of the remarks to follow and amendments above, reconsideration and allowance of this application are respectfully requested.

Status of Claims

Claims 1-36 and 39 remain in this application. Claims 7-19, 21, 22, 24-28 and 30-36 are withdrawn from consideration. Claim 1 has been amended. Claim 39 has been added.

Claim Rejections under 35 USC 102

In the Office Action, Claims 1, 3-6, 20, 23 and 29 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,670,744 ("Buzak"). Applicants respectfully traverse the rejections.

Claims 1, 3-6, 20, 23 and 29 are allowable

Independent Claim 1 has been amended herein to better define Applicant's invention over Buzak. Claim 1 now recites limitations and/or features which are not disclosed by Buzak. Accordingly, the cited portions of Buzak does not anticipate claim 1, because the cited portions of Buzak fail to disclose every element of claim 1. For example, the cited portions of Buzak fail to disclose or suggest, *"wherein at least one of the first optical elements (61) and second optical elements (62) is a polarizing switch (61a, 61b, 61c) capable of changing the polarizing state of a light beam and the other of the at least one of the first optical elements (61) and second optical elements (62) is a grid polarizer (62a, 62b, 62c) capable of transmitting light with one polarization and reflecting light with an orthogonal polarization"*, as recited in claim 1. The Office states that Buzak teaches that the optical path length adjustor (50) comprises a plurality of first optical elements (34a, 34b) and second optical elements (62a, 62b, 62c) arranged in an alternating sequence along an optical path. See Office Action, page 2, paragraph 2. However, the above cited portion of Buzak discloses that the first optical elements (34a, 34b) **are variable retarders 34** for changing the rotational sense of the polarization state of incident light rays by changing the amount of retardation

applied to them as they travel through it. Variable optical retarder 34 selectively develops zero retardation and half-wave retardation of normally incident green light in response to the two voltage signals developed by control circuit 22. The two amounts of optical retardation cause circularly polarized green light rays to exit variable optical retarder 34 in one of two orthogonally related rotational senses. *See* Buzak, col. 6, lines 4-12.

In contrast to Buzak, the polarizing switches of the invention **do not** operate by changing the rotational sense of the polarization state of incident light rays by changing the amount of retardation applied to them as they travel through it, as described above. Instead, the polarization switches 61 of the invention provide a polarized optical output in one of two possible polarization states, according to an applied electric field. In some embodiments, the polarization switch may be embodied as a single cell liquid crystal panel with a twisted nematic 90 degree structure or a ferro-electric effect cell which allows a higher switching speed. Further, it is noted that optical retarders are **wavelength dependent** and therefore color dependent, causing a degradation of the optical signal reaching the user. This drawback does not occur with the polarization switches 61 of the invention.

The above cited portions of Buzak further disclose that the second optical elements (62a, 62b, 62c) are embodied as three right-hand twist liquid crystal chiral cells 62a, 64a, and 66a, which are preferably constructed as a single assembly. Chiral cells 62a, 64a, and 66a are tuned to the respective colors green, red, and blue. Buzak discloses that a preferred order of the chiral cells would be blue, green, and red in the direction away from observer 24. The reason is that images in colors of longer wavelengths appear to be closer to the observer. The preferred order recited compensates for this effect. *See* Buzak, col. 7, lines 38-50.

As is true of the optical retarders of Buzak, the three right-hand twist liquid crystal chiral cells 62a, 64a of Buzak are also **wavelength dependent**. In contrast to Buzak, the grid polarizers (62a, 62b, 62c) of the invention are **wavelength independent**. It is well known that wire grid polarisers 62a, 62b, 63c have been in use for some time in the microwave region of the electromagnetic spectrum and have recently seen use in the visible region. The theory behind the wire grid polarisers 62a, 62b, 63c is based on electromagnetic induction and wave interference. The function of the wire grid is to allow a light beam incident on the

parallel wires having a polarization state orthogonal to the direction of the wires to be transmitted through the grid. This arises since the electric field of the light beam being orthogonal to the wires cannot generate a significant current in the wires. However, an incident light beam having a polarization state parallel to the direction of the wires can generate a significant current in the wires to excite electrons in the wires so as to radiate light in both forward and rearward directions. The forward radiated light cancels the light moving in the forward direction and the rearward radiated light emerges as a reflected wave. It is respectfully submitted that the chiral cells of Buzak do not operate in this manner. Instead, the chiral cells (and cholesteric layer described in a further embodiment) of Buzak are **wavelength dependent** (tuned to match the color of light emitted by the cathode ray tube) and therefore different from the grid polarizers of the invention. Buzak discloses that **within its reflection band of wavelengths**, the cholesteric layer reflects circularly polarized light rays of the rotational sense of its helical twist and transmits circularly polarized light rays of the opposite rotational sense. **Outside its reflection band**, the cholesteric layer transmits light rays of all polarization states. *See* Buzak, col. 3, lines 16-21.

Buzak further describes, by way of example (see Fig. 2) the path 27 and polarization state of an exemplary light ray that reflects from the second depth plane. The nomenclature "LCP" and "RCP" refer to, respectively, left-circularly polarized and right-circularly polarized light. In the monochrome system, cathode ray tube 12 preferably emits green light. The unpolarized light rays strike **a right-hand twist liquid crystal chiral cell 28 which reflects only right-circularly polarized light rays within a narrow wavelength range of about 40 nanometers**. Chiral cell 28 is preferably tuned to reflect green light to match the color of light emitted by the cathode ray tube. *See* Buzak, col. 7, lines 37-60.

Based on the above reasoning, it is respectfully submitted that the first and second optical elements of the invention, which are now more particularly and precisely recited in the independent claims as polarizing switches and grid polarizers, respectively, are different from the first and second optical elements of Buzak (i.e., variable optical retarders and three right-hand twist liquid crystal chiral cells). Hence, claim 1 is allowable.

Claims 3-6 and 20 depend from independent Claim 1 and therefore contains

the limitations of Claim 1 and is believed to be in condition for allowance for at least the same reasons given for Claim 1 above. Accordingly, withdrawal of the rejection under 35 U.S.C. §102(b) and allowance of Claims 3-6 and 20 is respectfully requested.

Independent Claim 20 recites similar subject matter as Independent Claim 1 and therefore contains the limitations of Claim 1. Hence, for at least the same reasons given for Claim 1, Claim 20 is believed to recite statutory subject matter under 35 USC 102(b).

Claim 29 depends from independent Claim 23, which Applicants have shown to be allowable. Accordingly, claim 29 is also allowable, at least by virtue of its respective dependency from claim 23.

New Claims

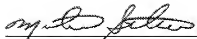
Claim 39 has been added. Claim 39 recites a limitation which was previously incorporated from canceled claim 2 and re-instated here as new Claim 39.

Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims presently pending in the application, namely, Claims 1, 3-6, 20, 23, 29 and 39 are believed to be in condition for allowance and patentably distinguishable over the art of record.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call Mike Belk, Esq., Intellectual Property Counsel, Philips Electronics North America, at 914-945-6000.

Respectfully submitted,



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